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Stalk Breakage and Rot Caused by Physoderma in Iowa

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Stalk Breakage and Rot Caused by Physoderma in Iowa

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An unusual disease has been reported in several fields in southwest and western Iowa over the past couple of weeks. Several samples were received in the Plant Disease and Insect Clinic and pathologists from ISU Extension and Outreach visited a field in Adair County.

Symptoms and signs of the disease

First symptoms noticed are plants that break at the first or second node (Figure 1). The nodes at which breakage occurs are black (Figure 2) and some stalk rot of the pith may be present (Figure 3). Microscopic examination of the symptomatic tissue reveals thousands of light brown sporangia (Figure 4 and 5). This has been confirmed as Physoderma maydis. This fungus also causes the more familiar Physoderma brown spot (Figure 6); however, the foliar symptoms have not been widely prevalent in fields with the stalk rot.

There are a couple of reports of stalk breakage and rot caused by Physoderma. In Illinois, severe outbreaks with up to 80 percent lodging in some fields were reported in the early 1970s (Burns and Shurtleff, 1973). There are also reports from North Carolina in 1919 (Tisdale, 1919) and Mississippi in 1957 (Broyles, 1959).

Physoderma is not usually an economic problem in Iowa or the United States. In recent years, we have seen an increase in the occurrence of Physoderma brown spot on leaves. This may be related to hybrid genetics or the wet springs we have had.

Sporangia can overwinter in soil and infected tissues. Under wet weather conditions, this pathogen produces swimming zoospores and, consequently, free water is necessary for infection to occur. The risk of infection increases at moderate temperatures (73-86° F) and when rainwater sits in the whorl for a period of time. Moreover, young plants are more susceptible to disease but become more resistant with age.

In order to reduce the risk of infection, choose resistant hybrids and avoid planting susceptible hybrids in poorly-drained areas. Crop rotation and tillage practices may reduce sources of inoculum from soil and infected plant debris.

Figure 1. Stalk breakage caused by Physoderma maydis in the field

Figure 2. Dark lesions girdling the lower nodes of affected plants

Figure 3. Stalk rot associated with infection by Physodermis maydis

Figure 4. Light brown sporangia of Physodermis maydis in infected stalk tissue

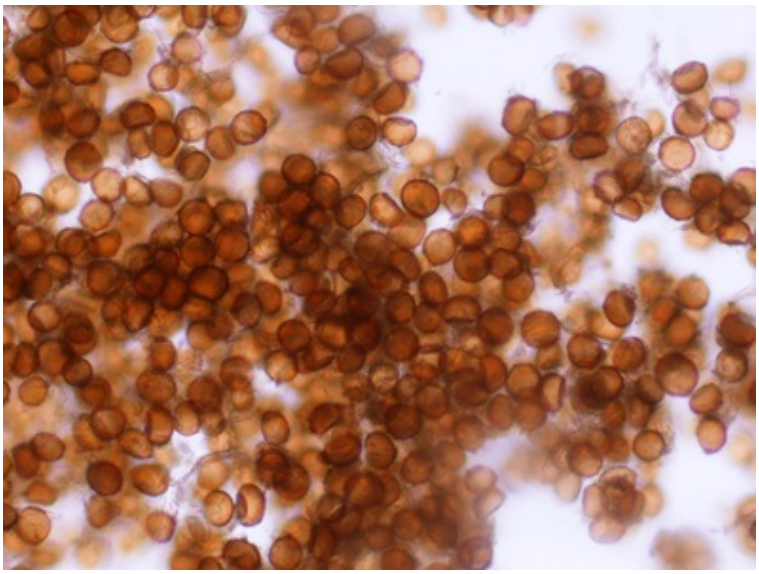

Figure 5. Microscopic view of sporangia of Physodermis maydis

Figure 6. Typical leaf symptoms of Physoderma brown spot

References

Burns and Shurtleff. 1973. Plant Dis. Rep. 27:630-633
Tisdale. 1919. Phytopathology 9:51-51
Broyles. 1959. Plant Dis. Rep. 43:18-21

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